

HEALTH AND SAFETY PLAN CEDAR AND KETTNER DEVELOPMENT PROJECT SAN DIEGO, CALIFORNIA

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1. SITE DESCRIPTION

The County of San Diego Department of General Services (DGS) proposes to redevelop the city block bounded by Cedar Street, Kettner Boulevard, Beech Street, and tracks of the San Diego Trolley in San Diego, California (site) (Figure 1). Approximately the northern three-quarters of the site consists of a parking lot, with the southern portion of the site along Beech Street occupied by one structure (Star Builders Supply Building). Previous investigations conducted at the site indicate that soil impacted by petroleum hydrocarbons and lead will need to be excavated, requiring special handling and appropriate offsite disposal.

Contaminants of concern (COCs) have been documented to be present in both the soil and groundwater beneath the site from historical land use on and adjacent to the property. The documented COCs include total petroleum hydrocarbons (TPH), aromatic and halogenated volatile organic compounds (VOCs), and lead. Based on soil sample analytical data, elevated lead is present at two isolated locations; however, isolated areas of burn ash may be encountered in shallow soil. Other constituents of potential concern may also be present at the site.

2. SCOPE OF WORK

DGS has retained the services of McCarthy Building Companies (McCarthy), General Contractor, to oversee the proposed redevelopment of the site. Excavation activities to be conducted at the site will remove soil to a depth of approximately 40 feet below the existing elevation to accommodate an underground parking garage (Figure 2). The Star Builders Supply Building is to remain. TPH- and lead-impacted soil has been pre-characterized and is to be disposed of at an approved offsite facility under manifest.



3. ORGANIZATION AND RESPONSIBILITIES

Personnel responsible for fieldwork are identified in Table 1.

Table 1 – Responsible Personnel for the Site

Company Name	Personnel Name	Daytime Phone	After Hours Phone
McCarthy Building Companies, Inc.	Shawn Burkholder Project Manager	619-821-3111	949-554-9875
McCarthy Building Companies, Inc.	Steve Mollner Project Superintendent	619-821-3111	858-688-0670
McCarthy Building Companies, Inc.	Dave Alofaituli Site Health & Safety Officer	949-355-1960	949-355-1960
Sierra Pacific West, Inc.	Tom Brown	760-599-0755	760-599-0755
Sierra Pacific West, Inc.	Chris Brown	858-722-8822	858-530-9165
Condon-Johnson & Associates, Inc.	William Lincke	310-863-2200	310-863-2200
Condon-Johnson & Associates, Inc.	Gabriel Garcia	310-261-1447	310-261-1447
Foothill Engineering & Dewatering, Inc.	David Bradford	951-258-9417	951-258-9417
Foothill Engineering & Dewatering, Inc.	Robert Thomas	951-258-9427	951-737-5391

4. HAZARD ANALYSIS

Significant hazards identified during the job hazards analysis include physical hazards, industrial hazards, health hazards associated with demolition, chemical hazards, and biological hazards. The following sections provide more specific information about each hazard.

4.1. Physical Hazards

Physical hazards associated with utility improvements include: general physical hazards; noise; vehicle and heavy equipment operation; soil excavation and trenching; subcontactor-furnished equipment; falling, slipping, and tripping; lifting/twisting; and heat stress. These physical hazards are discussed more specifically in the following sections.



4.1.1. Soil Excavation and Trenching

Before the start of excavation activities, a "competent person" in accordance with 29 CFR 1926.650 (a person who has the knowledge and training to identify hazards and the authority to correct the hazards) will ensure that the following activities are completed:

- Contact utility companies to ensure underground installations and utilities are located. Make sure underground installations and utilities are located, protected, supported or removed as necessary to safeguard employees.
- Remove or secure any surface obstacles, such as trees, rocks and sidewalks that may create a hazard.
- Classify the type of soil and rock deposits at the site. One visual and at least one analytical classification should be made.

The following safety rules must be implemented during excavation activities when personnel are to enter the excavation:

- In excavations greater than four feet, and where hazardous atmospheres exist, or could reasonably be expected to exist, the competent person will test the air before entering the excavation. The competent person will use a photo-ionization detector (PID) to test for VOCs and a combustible gas indicator (CGI) to test for the presence of oxygen, carbon monoxide, hydrogen sulfide, and explosive concentrations of gases or vapors. Action levels for these gases and vapors are provided in Section 8, Table 2.
- Keep materials or equipment that might fall or roll into an excavation at least two feet from the edge.
- Adequate protection from falling rock, soil or other materials and equipment will be provided in the form of benching, sloping or shoring.
- Do not work in excavations where water has accumulated, or is accumulating, unless adequate precautions have been taken.
- Do not cross over an excavation unless walkways are provided. Guardrails must be provided if the walkway is six feet or more above the bottom of the excavation.



4.1.2. General Physical Hazards

The project area is predominately unpaved. During excavation activities, trenches, areas that are poorly drained, rough or uneven terrain, protruding objects, and impalement hazards may be present in the construction areas. The Contractor Site Health and Safety Officer (SHSO) will assure that a careful pre-work walkover is made of all work areas and potential access or egress routes. Unsafe areas may be flagged or taped by the SHSO and will be identified to all personnel.

4.1.3. Noise

Working near an excavator, generator, or other heavy equipment can subject workers to noise exposures in excess of allowable limits. Nonessential personnel who do not need to be next to loud equipment should stay as far away as possible to lower the risk of noise-induced hearing loss. Personnel who operate or must work next to loud equipment will be required to wear hearing protection (earplugs or muffs) to reduce their exposure to excessive noise. Persons who enter areas in excess of 85 decibels will be required to wear hearing protection.

Subcontractor personnel will implement equivalent effective hearing conservation programs in accordance with this plan.

4.1.4. Vehicle and Heavy Equipment Operation

Vehicles will only be operated in authorized areas. When moving equipment, caution should be exercised in order not to damage equipment or cause injury. When backing up heavy vehicles (larger than pickup trucks), passenger vehicles, or pickups with obscured rear vision, a guide will be used to direct the vehicle. Extra caution will be exercised during vehicle operation on dike roads, industrial areas, and other close spaces. Personnel directing traffic will wear orange vests. Each vehicle will be equipped with a minimum of one fire extinguisher rated 3A:40B:40C.



4.1.5. Subcontractor-Furnished Equipment Including Energized and Rotating Equipment

The subcontractor is responsible for proper and safe operation of all the equipment they bring to the site. Employees will not operate subcontractor-furnished equipment unless that equipment is expressly provided for use of personnel.

4.1.6. Falling, Slipping, and Tripping

Work zone surfaces will be maintained in a neat and orderly state. Foot traffic will avoid areas where materials are stored on the ground. Tools and materials will not be left randomly on surfaces where not in direct use. Hoses and cables will be grouped, routed to minimize hazards, and covered with a ramp or bridge or clearly marked with hazard tape or flags if such material will remain in place for more than one shift.

4.1.7. Lifting/Twisting Injuries

Use of equipment that requires twisting subjects the worker to forces which could cause back, shoulder, or neck injury. Common-sense safety precautions will be followed such as frequent rest breaks, proper lifting technique, and careful ergonomic practices.

Lifting is a common activity at most job sites. During any manual material-handling tasks, personnel will be trained to lift with the force of the load suspended on their legs and not on their backs. An adequate number of personnel or an appropriate mechanical device must be used to safely lift or handle heavy equipment. When heavy objects must be lifted manually, workers will keep the load close to the body and will avoid any twisting or turning motions to minimize stress on the lower back. The SHSO can provide a lifting orientation and specific back stretching and warm-up exercises to help minimize the potential for back injuries. Use of these exercises by all field personnel at the start of each shift will be encouraged by the SHSO.



4.1.8. Heat Stress

Heat stress is an important health consideration. Weather conditions, characterized by high temperatures and low humidity, in conjunction with wearing personal protective clothing, may aggravate heat-stress problems. Standard measures, including designating a shaded rest area, taking frequent rest breaks, and performing heat-stress monitoring of workers, will be used to minimize heat-stress-related problems. A readily available supply of liquids, such as water and fluids containing electrolytes, will be available at the work site to replenish body fluids.

Visual observation of workers by the SHSO for heat-stress-related signs and symptoms, and body core temperature monitoring may be performed when outside temperatures exceed 70 degrees Fahrenheit (°F) and impermeable clothing is being worn, when outside temperatures exceed 90°F in street clothes, or whenever other conditions warrant. Signs and symptoms of heat stress include profuse sweating, headache, skin flushing, dizziness, confusion, and rapid heart rate. Workers exhibiting a body core temperature of 100.4°F or greater (measured at the ear drum) will be removed to a cooler area or activity until body core temperature returns to below 99°F.

If persons exhibiting heat-stress symptoms are left untreated, the condition can elevate to heat stroke. Heat stroke is typically manifested by hot, dry skin with a body core temperature of 104°F or greater. Heat stroke can be fatal if treatment is delayed. Therefore, persons exhibiting heat-stroke symptoms need to have their core temperature reduced immediately by use of cold packs, cold water wipes, or immersion. Heat-stroke victims need to be transported to a professional medical facility immediately after the victim's core temperature has been reduced or while the victim's core temperature is being reduced.

4.2. Industrial Hazards

Project activities may expose personnel to various industrial hazards. The following sections present a summary of potential industrial hazards which may be encountered and general methods that will be utilized to assure worker safety. The SHSO or designee will observe all



operations to oversee industrial safety hazards. To prevent injuries from industrial hazards, engineering controls, administrative procedures (e.g., lockout-tagout procedures), and equipment-guarding techniques will be implemented. In addition, personal protective equipment (PPE) will be used when engineering controls alone can not reduce the risk of exposure to hazards to within acceptable limits. The following sections summarize industrial hazardous which may be encountered and the engineering controls and/or PPE which is necessary for each hazard.

4.2.1. Work Within Roadways

Work within roadways may subject workers to heavy traffic, some moving at high speeds. Traffic will be carefully controlled by in accordance with the project traffic control plans and permits. In addition, workers will maintain high awareness of traffic conditions during work location mobilization and during subsequent activity. Whenever possible, work will be conducted behind barriers such as work vehicles or Jersey barriers that will be marked by early warning signs such as cones, lighted signs, or flagmen. Traffic control must be performed in accordance with permits and plans, as applicable.

4.2.2. Underground Cables

Buried underground cables may be present at the project area, an underground utility check will be performed before intrusive work. In addition, where records are inadequate or questionable, a utility search using specialized cable-detection equipment will be performed. Hand boring should be utilized to locate cables when their presence is suspected.

4.2.3. Pipelines

Buried pipelines containing natural gas and petroleum fuels are common in public roads. These pipelines present another source of a potential fire and explosion hazard. All work areas will be cleared by the SHSO or designated safety coordinator prior to soil-intrusive work or movement of heavy equipment into or through utility corridors. Project personnel will obtain written clearances that set forth the detailed requirements for obtaining clearance to excavate at the site. In addition, when locations of buried



lines are uncertain, excavation will always be performed by hand until the utility is located or the area is cleared. The responsible installation operations or maintenance department will review the location of emergency shutoff valves with project personnel at the pre-job meeting or tool box safety meeting prior to working in an area of concern.

4.2.4. High-Pressure Hoses

High-pressure hose ends may whip if the fitting becomes disconnected. All hose ends will be secured to minimize whipping, and connections should be secured to prevent accidental disconnects.

4.2.5. Welding and Torch Cutting

Welding will not be conducted without permit or approval of the SHSO. Welding will not be conducted over a borehole without special procedures approved by the SHSO.

4.2.6. Work from Elevated Platforms

Work from elevations greater than 6 feet will require fall-protection devices.

4.2.7. Suspended Loads

Work is not permitted under suspended loads during lifts. Accessible areas under suspended loads will be barricaded where feasible.

4.2.8. Overhead Electrical Hazards

Overhead cables may be present at the project area. A detailed hazard analysis will be prepared by the subcontractor prior to operating heavy equipment (rigs, excavators, cranes, etc.) underneath or within 20 feet of the maximum reach of the equipment. The analysis will consider equipment failure of overhead electrical hazards or switch gear.

4.2.9. Fire and Explosion Hazards

The potential for development of high petroleum hydrocarbon concentrations or flammable concentrations of other materials where soil-intrusive work is occurring may



exist. Care will be taken to assure that explosive mixture monitoring is performed in an adequate manner and that ignition sources are controlled or eliminated.

4.2.10. Solar Radiation

The SHSO will encourage Program personnel working out of doors to utilize covering or sunblock preparations to minimize the harmful effects of the sun's rays on the skin.

4.3. Health Hazards Associated with Demolition

During demolition or renovation activities, health hazards are sometimes encountered, which may not be immediately apparent. These can include hazardous building materials such as asbestos, lead, polychlorinated biphenyls (PCBs) and mercury, or biological contamination of building materials such as mold or animal feces which could be contaminated with potentially dangerous etiological agents. Each of these are briefly discussed in the following sections. Some tips for safe conditions during proposed demolition work include the following:

- Be sure that the proper surveys have been completed for all potential hazardous building materials such as asbestos, lead, mercury and PCBs, prior to demolition activities.
- Keep an active eye on new materials which may be uncovered during fieldwork which may not have been assessed prior to initiation of work.
- Recognize potentially hazardous conditions such as the presence of mold, bird or rodent feces and bring the condition to the attention of your supervisor.
- When cleaning up hazardous materials be sure that the proper training has taken place and a hazard assessment has identified the appropriate controls and PPE required for the task.

4.3.1. Asbestos

Asbestos containing material may be associated with structures (i.e. residential, commercial, industrial buildings) or infrastructure (i.e. pipeline insulation, cementitious water lines, bridges) at the project area. Prior to disturbance of suspected asbestos-containing material, a survey must be performed to ascertain the presence of this product.



Asbestos is regulated as a carcinogen in accordance with OSHA. Work in areas where asbestos is present will be evaluated prior to disturbing this material, and as applicable, OSHA regulatory requirements will apply to the work. Asbestos may also be a contaminant of soil in locations near overhead pipe racks, process areas, former process areas, or where fill has been imported. Where asbestos is suspected, stop work immediately and inform a supervisor.

4.3.2. Lead Paint

Lead paint has been used widely on building interiors and exteriors and is commonly found in roadway strippings and paint on traffic control apparatus. Lead is a toxic heavy metal and a suspected carcinogen and may become a serious health hazard if it becomes airborne due to intrusive activities. As with asbestos, a survey must be performed to ascertain the presence of lead prior to destructive activities on site. Lead also may be encountered as a contaminant of soil in locations near tanks and other process equipment as a result of painting operations. In addition, it may also be encountered as a result of spills or leakage of lead additives to motor fuels. Where lead is identified as present in sufficiently high concentrations, work will be conducted in accordance with the applicable OSHA standards.

4.3.3. Polychlorinated Biphenyls

PCBs, also referred to as Aroclors, are synthetic industrial products that have been commonly used as cooling fluid and for electrical insulation. They are commonly found in fluorescent light ballasts and transformers and may be encountered during renovation or demolition activity. PCBs are common contaminants of oily type waste and are typically found in industrial areas and dumps. PCBs are recognized environmental pollutants and suspected human carcinogens. Work involving exposure to PCBs may require special precautions and medical evaluation. A site survey should be conducted prior to destructive activity to ascertain the potential presence of PCBs.



4.3.4. Treated Wood

Wood, treated with creosote and arsenic, is commonly used in outdoor applications near roadways including posts used for guardrails, steps, retaining walls, and fencing. Work involving the removal or cutting of these materials may require special precautions. A site survey should be conducted prior to handling materials to ascertain the possible presence of wood treated with creosote and/or arsenic.

4.4. Chemical Hazards

This section describes the toxicological (health) hazards associated with exposure to organic and inorganic chemicals and metals during the project. Chemicals which may be encountered are described in the following sections.

In dry, arid conditions, exposure may occur principally by inhalation of contaminated particulates. Exposure to vapors can occur if trapped volatiles are exposed to the high heat conditions once the material is exposed to the atmosphere.

Chemicals brought into the field by personnel or activity support personnel may be used for activities such as surface and equipment decontamination, weed or pest control, and waste treatment and/or encapsulation. Hazards associated with these chemicals may include the following:

- possible oxygen deficiency if used in areas with poor ventilation;
- chemical burns or irritations:
- toxic exposures; and
- fires/explosions.

The SHSO will evaluate the need for special chemical-handling procedures during the chemical-use review process.

4.4.1. Petroleum Hydrocarbons

TPH is a term used to describe a large family of several hundred chemical compounds that originally come from crude oil. TPH is a mixture of chemicals, but they are all made mainly from hydrocarbons. Some chemicals that may be found in TPH are hex-



ane, jet fuels, mineral oils, benzene, toluene, xylenes, naphthalene, and fluorene, as well as other petroleum products and gasoline components. Some of the TPH compounds can affect your central nervous system. One compound can cause headaches and dizziness at high levels in the air. Another compound can cause a nerve disorder called "peripheral neuropathy," consisting of numbness in the feet and legs. Other TPH compounds can cause effects on the blood, immune system, lungs, skin, and eyes.

Animal studies have shown effects on the lungs, central nervous system, liver, and kidney from exposure to TPH compounds. Some TPH compounds have also been shown to affect reproduction and the developing fetus in animals. The International Agency for Research on Cancer (IARC) has determined that one TPH compound (benzene) is carcinogenic to humans. IARC has determined that other TPH compounds (benzo[a]pyrene and gasoline) are probably and possibly carcinogenic to humans. Most of the other TPH compounds are considered not to be classifiable by IARC.

4.4.2. Volatile Organic Compounds

Volatile organic compounds (VOCs) are emitted as gases from certain solids or liquids. VOCs include a variety of chemicals, some of which may have short- and long-term adverse health effects. Concentrations of many VOCs are consistently higher indoors (up to ten times higher) than outdoors. VOCs are emitted by a wide array of products numbering in the thousands.

Health effects may include eye, nose, and throat irritation; headaches, loss of coordination, nausea; damage to liver, kidney, and central nervous system. Some organics can cause cancer in animals; some are suspected or known to cause cancer in humans. Key signs or symptoms associated with exposure to VOCs include conjunctival irritation, nose and throat discomfort, headache, allergic skin reaction, dyspnea, declines in serum cholinesterase levels, nausea, emesis, epistaxis, fatigue, dizziness.

The ability of organic chemicals to cause health effects varies greatly from those that are highly toxic, to those with no known health effect. As with other pollutants, the extent and nature of the health effect will depend on many factors including level of



exposure and length of time exposed. Eye and respiratory tract irritation, headaches, dizziness, visual disorders, and memory impairment are among the immediate symptoms that some people have experienced soon after exposure to some organics. Many organic compounds are known to cause cancer in animals; some are suspected of causing, or are known to cause, cancer in humans.

4.4.3. Benzene

Benzene is a common constituent of motor fuels, aviation gasoline, and some industrial solvents. A known human carcinogen, benzene is the principal concern and the basis for establishing the action levels for continuous monitoring equipment in the vicinity of gasoline and other light distillate products. Continuous organic vapor monitoring will not detect benzene specifically; therefore, the action level is based upon the conservative assumption that the benzene content of the volatile mixture is less than 20 percent. The action level for respiratory protection may be revised once the airborne contaminant environment is fully characterized. The use of benzene-specific detector tubes or portable gas chromatography may be used to quantify benzene concentrations.

4.4.4. Carcinogens

Carcinogens are any chemicals or products capable of causing or inducing cancer or leukemia in humans. For Program purposes, carcinogens are classified, based upon OSHA, American Conference of Governmental Industrial Hygienists (ACGIH), International Agency for the Research on Cancer (IARC) or National Toxicology Program (NTP) classifications, into recognized or confirmed human carcinogens (Class I), suspect human carcinogens (Class II), questionable carcinogens (Class III), or not recognized as carcinogenic. If recognized or suspect carcinogens (Class I or Class II) have been identified in work areas, they are identified as such in this plan. Exposure by any route to recognized human carcinogens without published exposure limits will be maintained at the absolute practicable minimum level.



4.4.5. Flammability

The possibility of flammable vapors from high concentrations of volatile petroleum hydrocarbons exists at the project area. Accordingly, monitoring will be conducted to identify locations where flammable vapors may ignite from sparks generated by equipment.

4.4.6. Other Heavy Metals

A variety of heavy metals are encountered as contaminants at industrial or military sites. Some heavy metals are highly toxic; others are also recognized human carcinogens. Because these materials are not volatile unless highly heated, control by proper use of PPE and personnel hygiene practices will prevent significant exposure to heavy metals.

4.4.7. Unidentified Chemicals

Chemicals that have not been identified or considered may be present at field locations. Until initial sampling, analysis, and atmospheric characterization are complete, site work will be sopped under the direction of the SHSO if the action level for uncharacterized mixtures is exceeded. A conservative action level based upon total organic vapor monitoring will be utilized during fieldwork. Prior to starting site work, the SHSO will attempt to determine what hazardous chemicals and other hazardous materials have affected the subsurface environment in the vicinity of the site work.

4.5. Biological Hazards

The SHSO will screen the area for biological hazards during the initial site visit and will discuss any problems with field crew personnel during the pre-work review. Multiple biological hazards may be present at the project area. The most common hazards anticipated are discussed below.

4.5.1. Insects

Bees, wasps, yellow jackets, black widow spiders, scorpions, and brown recluse spiders present a potential hazard on this project, especially so for those individuals sensitized to those bites or stings. Prior to initial assignment on this project, personnel with known al-



lergic responses to insect stings will be identified and field supervisors made aware of this condition. These personnel will also carry an antidote kit if so advised by their physician. The SHSO will confirm that the antidote kit is accessible and notify the emergency medical service providers in the event of any incident.

In all cases, a victim suspected of being bitten by either a black widow or brown recluse spider, or stung by a scorpion will receive medical attention. The venom from the brown recluse spider is capable of causing coma and kidney failure in its victim.

Protection methods against insects may be employed, such as the use of protective clothing or insect repellents, as well as extermination measures, and training in recognition and identification of harmful insects.

4.5.2. Vermin

Rats, mice, squirrels, and rabbits are carriers of disease. Where vermin are identified in work areas, the SHSO will be immediately notified. Bites will be immediately reported and medical care obtained.

Infections associated with rodent-borne disease are present in the southwestern United States. Infections may occur in humans associated with activities that bring humans into contact with rodents, rodent saliva, or rodent excreta. Activities that may bring humans into contact with the etiologic agents causing infection include the following situations:

- working in areas of field crops;
- occupying previously vacant cabins, buildings, or outhouses;
- cleaning outbuildings;
- disturbing rodent-infested areas;
- visiting areas where rodent populations have increased; and
- entering crawl spaces or other potential rodent-infested areas.

Transmission of disease may occur through broken skin, contact with conjunctivae, ingestion of contaminated food or water, or inhalation of aerosols. Prevention is through environmental hygiene practices that deter rodents from colonizing the work environment.



Cleanup of rodent-contaminated areas or areas meeting the above criteria will be performed wearing Level C protective equipment, including full-face respirator and head covering. Vacuuming or dry sweeping should not be used since this may generate aerosols. Surfaces should be disinfected by spraying with a detergent, water, and disinfectant mixture. Reusable protective clothing will be decontaminated and disinfected daily. Where rodent infestation is positively identified, all waste will be disposed in double-bagged containers and will be marked as infectious.

4.5.3. Viral, Bacterial, and Other Diseases

Personnel working at the project area may be exposed to other etiologic agents carried by insects. Therefore, such personnel will be informed of preventative and prophylactic measures for protection.

5. SITE CONTROL

For intrusive field activities such as soil trenching, excavation, loading, placement and compaction, precautions shall be taken to assure that only authorized personnel with the proper training and PPE enter work areas associated with the operation of heavy equipment and/or the potential for exposure to hazardous conditions/materials. In these areas, access may be controlled with caution tape and/or barricades.

6. **DECONTAMINATION**

6.1. Personnel Decontamination

A minimal decontamination procedure (consisting of washing exposed skin with soap and water) shall be required at the project area.

6.2. Vehicle and Equipment Decontamination

The primary focus of any decontamination program is to minimize the spread of contaminated material to other areas of the site or beyond a given site. During field activities, a



variety of vehicles and small and heavy equipment is anticipated. Vehicles and equipment shall be decontaminated, as necessary, prior to their departure from the site. Care shall be taken to avoid spillage of contaminated materials and/or tracking such materials off site or to portions of the site know to not be impacted by contaminants.

7. MEDICAL SURVEILLANCE REQUIREMENTS

As applicable, site personnel will be required to participate in their employer's medical surveillance program. Contractor medical surveillance programs will be described in respective company documents. As applicable, subcontractors will be required to demonstrate, by document submittal, their maintenance of OSHA-compliant programs, including Title 8 California Code of Regulations, Section 5192, and to maintain records as required by the applicable contract. Specific exceptions to the medical surveillance requirements may be granted by the SHSO for site access by specialty subcontractors performing non-intrusive activity. If PPE, beyond what is normally required for work where hazardous substances are not anticipated, becomes necessary on site, an appropriate exclusion zone will be established and personnel without medical clearance for respiratory protection or the appropriate PPE will be prohibited entry.

8. HAZARD MONITORING

During field activities, the following monitoring requirements will be mandated:

Table 2 – Chemical/Physical Agent Monitoring Requirements

Scope of Work Task	Chemical/ Hazard	Instrument	Responsible Group	Initial Frequency
Low Hazard				
Fence removal, potholing, utility clearance, non-intrusive work	Dust	Visual	SHSO	Start of task, hourly, continuous if zone of contamination encountered
Decontamination of equipment (if necessary)	Organic vapor	PID	SHSO	@ SHSO discretion



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Table 2 – Chemical/Physical Agent Monitoring Requirements

Scope of Work Task	Chemical/ Hazard	Instrument	Responsible Group	Initial Frequency	
Moderate Hazard					
Excavating and other subsurface soil activity	Organic vapor, Explosive or toxic environ- ment, and Dust	PID/CGI, Visual	SHSO/Excavati on Competent Person	Start of task, hourly, continuous if zone of contamination encountered	
Notes: PID – photoionization detector CGI– combustible gas indicator					

Table 3 – Monitoring Methods and Action Levels for Petroleum Hydrocarbon Only¹ Sites Using Screening Survey Instruments

Hazard	Method	Action Level ²	Protection Action
		Background to 5 ppm ⁶ above background	No action required
Total Organic Vapor (benzene suspected)	PID ³ or FID ⁴	> 5 ppm	Air purifying respirator, half or full face, level C protection with organic vapor cartridges
		> 50 ppm	Supplied air protection, Level B
		> 100 ppm	STOP WORK
		Background to 25 ppm above background	No action required
Total Organic Vapor (benzene absent ⁷)	PID or FID	> 25 ppm	Air purifying respirator, half or full face, level C protection with organic vapor cartridges
		> 200 ppm	Supplied air protection, Level B
		> 500 ppm	STOP WORK
		< 10% LEL ⁸	No action
Combustible Gas	CGI ⁵	10% to 20% LEL	Start continuous monitoring; Permit only classified electrical equipment and nonsparking tools
		> 20% LEL	STOP WORK, ascertain source of gas
		< 19.5% v/v ⁹	Leave area, evaluate reason for defi- ciency, monitor again remotely or with IDLH ¹⁰ entry program
Oxygen Concentration	CGI ⁵	19.5 to 20.5 v/v	Slight deficiency, continue continuous monitoring
		20-5 - 21.0% v/v	Normal range
		> 22.0% v/v	Investigate cause, STOP any potential spark-producing activity

Table 3 – Monitoring Methods and Action Levels for Petroleum Hydrocarbon Only¹ Sites Using Screening Survey Instruments

Hazard	Method	Action Level ²	Protection Action
Hydrogen Sulfide (H ₂ S)	CGI ⁵	> 10 ppm H ₂ S	Leave area, evaluate reason for elevated reading, monitor again remotely or with IDLH ⁹ entry program
		No Visible Dust	No action
Heavy Metals/Other	Visual Dust Monitoring	Visible Dust	Upgrade to Level C with organic vapor/ high-efficiency particulate air (HEPA) cartridges. Slow work & use dust control (water). Stop work if dust is excessive.

Notes:

- Action levels based on gasoline, aviation gasoline, and diesel contaminants only. A conservative 20% benzene is assumed where benzene is not verified absent from atmosphere. Action levels should be reestablished based on periodic analysis of atmosphere.
- All action levels are readings observed above background
- 3 photoionization detector
- flame ionization detector
- 5 combustible gas indicator
- 6 parts per million
- Confirm benzene is less than 1 ppm with chromatography or colorimetric indicator tube specific for benzene in the presence of petroleum hydrocarbons (Drager, benzene 0.05, #CH24801 or equivalent)
- 8 lower explosive limit
- 9 volume per volume
- immediately dangerous to life or health

Table 4 – Action Levels for Heat Stress

Type Measurement	Action Level	Action
Ear insertable core temperature	100.4° F or greater	Remove from work
Ear insertable core temperature	<99° F	Return to work

Table 5 – Frequency of Physiological Monitoring for Fit and Acclimated Workers

Adjusted Temperature ¹	Normal Work Ensemble ² After Each:	Impermeable Ensemble After Each:
90° F (32.2° C) or above	45 minutes of work	15 minutes of work
86.5° F - 90° F (30.8° C - 32.2° C)	60 minutes of work	30 minutes of work
82.5° F - 86.5° F (28.1° C - 30.8° C)	90 minutes of work	60 minutes of work
76.5° F - 82.5° F (25.3° C - 28.1° C)	120 minutes of work	90 minutes of work
72.5° F - 76.5° F (22.5° C - 25.3° C)	150 minutes of work	120 minutes of work

Notes:

- Calculate the adjusted air temperature (Ta adj) with the following equation: Ta adj(°F) = Ta(°F) + (13 X percent sunshine 100). Measure air temperature (Ta) with a standard mercury-in-glass thermometer with the bulb shielded from radiant heat. Estimate the percent sunshine by judging what percent time the sun is not covered by clouds that are thick enough to attenuate shadow (100 percent sunshine = no cloud cover and a sharp, distinct shadow; 0 percent sunshine = no shadow).
- A normal work ensemble consists of coveralls or other cotton clothing with long sleeves and pants.

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9. PERSONAL PROTECTIVE EQUIPMENT

Based on previous investigations conducted at the site, the anticipated level of PPE for most of the field activities will be Level D and modified Level D. The minimum required level of personal protection during field activities is Level D. In addition, chemical-resistant gloves will be mandatory for all personnel during handling of soil or decontamination equipment. Ear plugs will be worn if, at any time, verbal communication becomes difficult to comprehend within a radius of 3 feet. All PPE must meet current American National Standards Institute standards. The Contractor is responsible for providing PPE for site personnel, including subcontractor personnel.

Level C PPE will be required at any activity location where the levels of contaminants exceed the action levels listed in this plan. Upgrading to Level C PPE involves Level D PPE with the addition of Tyvek coveralls, nitrile gloves, and an appropriate respirator with HEPA and organic vapor (OV) cartridges. The following table describes the PPE associated with each level of protection.

Table 6 – Personal Protective Equipment Levels

Level	Body	Respirator	Skin	Other
D	Normal work clothes Long pants	None	Work gloves	Hard hat Safety glasses
Mod. D	Tyvek [®] suit	None	Chemical-resistant latex or nitrile gloves	Hard hat Safety glasses
С	Tyvek [®] suit	Air purifying respirator with HEPA ^b and OV	Chemical-resistant latex or nitrile gloves	Hard hat Safety glasses
В	Tyvek [®] suit Self-contained breathing apparatus or supplied-air respirator		Chemical-resistant latex or nitrile gloves	Hard hat Safety glasses
A	Encapsulating Self-contained breathing appa-		Chemical-resistant latex or nitrile gloves	Hard hat Safety glasses

Notes:



a where the potential for heat stress exists, modified Level D may be downgraded to Level D if continuous monitoring verifies the absence of organic vapor

b HEPA – high-efficiency particulate air

^c OV – organic vapor filter

Table 7 – Personal Protective Equipment (potential or actual chemical exposure)

Task	Hazard	Level	Body	Respirator	Skin	Other
Non-intrusive activities	No chemical exposure anticipated	NA	Normal work clothes, long pants	NA	NA	NA
Excavation, loading, placement, and/or compaction of TPH impacted soil	Minimal chemical exposure, possible skin contact, noise, solar radiation	D* or C	Normal work clothes, long pants	Half or full-face respirator with high- efficiency particulate air (HEPA) and organic vapor (OV) cartridges if action levels exceeded	Latex or nitrile gloves	Hard hat, Safety glasses, Hearing protection, Steel- toed boots, Safety Vest
Decontamination of equipment working in TPH impacted area	Minimal chemical exposure, possible skin contact	D*	Normal work clothes, long pants	N/A	Latex or nitrile gloves	Hard hat, Safety glasses, Hearing protection, Steel-toed boots, Safety Vest

Note:

Where the potential for heat stress exists, modified Level D may be downgraded to Level D if continuous monitoring verifies the absence of organic vapor.

9.1. Roadway Work Zones – Reflective Vest Requirements

The standard specifies that high-visibility apparel be made of background material that is fluorescent red-orange, yellow-green, or a combination of these, and reflective material placed so that the worker is seen from 360 degrees. The standard (American National Standards Institute /International Safety Equipment Association [ANSI/ISEA] 107-1999) defines three garment classifications (I, II, and III) based on worker hazards and tasks, complexity of the work environment or background, and vehicular traffic and speed.

Table 8 - ANSI/ISEA 107-1999 Standard Classes

Class I	Lowest level of visibility. Generally worn in environments where speeds do not exceed 25 miles per hour. Orange or lime vest with 3/8-inch reflective tape.		
Class II Commonly work in environments where traffic is moving in excess of 25 miles per hour Orange or lime vest with 2-inch reflective tape.			
Class III The highest level of visibility. Worn in environments where traffic is moving in expectations of the standard size of the st			



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This minimum requirement is to be followed by all employees, subcontractors, and visitors that are required to wear a safety vest on the project. This includes, but is not limited to, work on or near active highways and/or roadways or when the construction contractor and/or client requires a safety vest to be worn on a project.

10. CONFINED SPACE ENTRY

Confined spaces, including but not limited to trenches, ditches, holes, culverts, structures, and tanks, present multiple hazards including the potential for oxygen deficiency, toxic agent exposure, heat stress, engulfment, and other hazards.

Any excavations to be entered by site personnel will be classified by a competent person prior to entry. Permit-required confined space entry is not anticipated for this project. A designated OSHA-competent person for confined space work will be on-site to classify spaces, determine protective measures, and perform the appropriate monitoring during all confined space entry activities. Detailed confined space entry procedures will be maintained for any permit-required confined space work.

11. SPILL PREVENTION AND CONTROL MEASURES

11.1. Preventive Measures

- Inspect all containers upon delivery to the site for visible defects and ensure that each drum or container includes a re-sealable lid.
- Set 55-gallon drums on wooden pallets to facilitate transport via forklift.
- Perform weekly inspections of any storage areas.
- Select flat areas for temporary storage away from high-traffic zones and storm or sewer drains.

11.2. Spill Containment Measures

The following actions will be taken by field personnel assigned to the field activities in the event of a spill:



- Immediately notify the SHSO,
- Workers not involved in spill containment and/or cleanup shall evacuate the immediate area and designated emergency response personnel attired in appropriate PPE (see Section 9), shall proceed to the spill area with a spill cleanup and control kit, including absorbent materials,
- Attempts shall be made to stop the source(s) of spillage immediately,
- The SHSO shall monitor for exposure to chemicals or hazardous substances during spill cleanup work and shall stay at the spill area until the area has been cleared, inspected, and readied for reentry. A spill incident report shall be prepared by the SHSO.

11.3. Record Keeping and Notifications

The SHSO shall thoroughly document the spill in an Incident Report which will be forwarded to the General Contractor's supervisor and the Construction Manager. Records of all hazardous materials releases shall be maintained with the project files and the facility operating record. The General Contractor's supervisor and/or the Construction Manager will make any necessary notifications to off-site authorities and the SHSO will approve the reentry to the site for routine use and will issue a final release report pertaining to cleanup of the area.

12. EMPLOYEE TRAINING ASSIGNMENTS

For work within contaminated areas, a matrix summarizing training requirements for the General Contractor's supervisor and personnel, subcontractor supervisors and personnel, visitors, and vendors is presented in Table 9.

Table 9 – Training Assignment Matrix

Category	40-Hour Basic	8-Hour Refresher	24 Hours Supervised Experience	McCarthy Safety Orientation	Site- Specific	First Aid/CPR
General Contractor Supervisor	X	X	X	X	X	X
General Contractor Employee	X^1	X^1		X	X	
Subcontractor	X^1	X^1	X	X	X	
Visitor	X^2	X^2	X^2	X	X	
Vendor	X^2	X^2	X^2	X	X	

Notes:



¹The requirement for 40-hour basic and 8-hour refresher training for certain non-intrusive work shall be made on a case-by-case basis by the SHSO.

²Not required if escorted by trained personnel.

13. EMERGENCY RESPONSE

In the event of a medical emergency or fire during fieldwork at the site, the standard "911" emergency telephone number shall be called from the on-site mobile phone or any base phone. A mobile telephone will be available during all field activities. On a daily basis, and at each work location, the SHSO and/or field team leader will verify that mobile phones are operational.

Emergency facility locations and phone numbers are listed below. All project vehicles shall maintain a copy of this section together with the appropriate emergency maps at all times, in a readily accessible location.

The emergency facility located in closest proximity to the project area is Scripps Mercy Hospital, located at 4077 Fifth Avenue, San Diego, California. The route from the site, to the hospital is shown in Appendix A (the last page of this document).

Table 10 – Emergency Phone Numbers (to be posted by Site Health and Safety Officer at all phone locations)

Emergency	Number	Contact	Notes
Medical, Fire or Police	911	Emergency Operator	
Medical Center (to be used only if local hospital/clinic will be first contact)	(858) 499-2600 (direct line)	Scripps Mercy Hospital 4077 Fifth Ave San Diego, California 92103	

Refer to Figure 1 in Appendix A.



14. CERTIFIED INDUSTRIAL HYGIENIST REVIEW

The above Site Specific Health & Safety Plan has been reviewed and approved by the certified industrial hygienist (CIH) indicated below.

Stephen J. Waide, CIH, CSP

Principal Environmental Scientist

ONSITE WORKING PERSONNEL SIGN IN

The personnel listed below have 40-hour HAZWOPER training with current refresher status and have read and understood this Health and Safety plan, and agree to abide by its provisions.

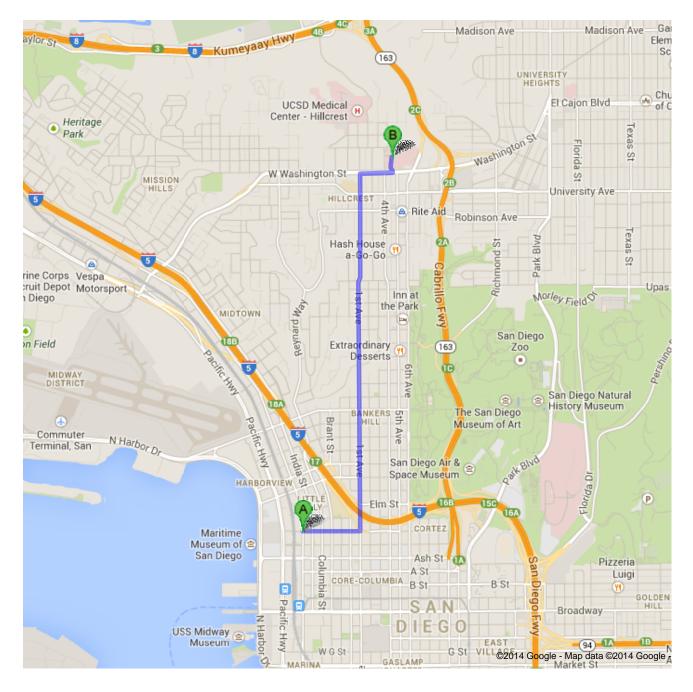
Onsite Personnel Name	Signature	Company	Date

APPENDIX A

HOSPITAL MAP



Directions to 4077 5th Ave, San Diego, CA 92103 2.5 mi – about 8 mins





Kettner Blvd & W Cedar St, San Diego, CA 92101

•	
 Head east on W Cedar St toward India St About 1 min 	go 0.3 mi total 0.3 mi
2. Turn left onto 1st Ave About 6 mins	go 1.9 mi total 2.2 mi
3. Turn right onto Washington St About 46 secs	go 0.2 mi total 2.4 mi
4. Turn left onto 5th Ave	go 469 ft total 2.5 mi
4077 5th Ave, San Diego, CA 92103	

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Map data ©2014 Google, Sanborn

Directions weren't right? Please find your route on maps.google.com and click "Report a problem" at the bottom left.